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Preparation of Oats and Barley for Pigs

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SUMMARY

OATS

100 pounds of WHOLE oats SOAKED
equal
99.62 pounds of whole dry oats.

100 pounds of COARSELY GROUND oats
equal
103.62 pounds of whole dry oats.

100 pounds of FINELY GROUND oats
equal
112.7 pounds of whole dry oats.

100 pounds of STEAM-ROLLED oats
equal
97.58 pounds of whole dry oats.

BARLEY

100 pounds of WHOLE barley SOAKED
equal
90.12 pounds of whole dry barley.

100 pounds of COARSELY GROUND barley
equal
109.6 pounds of whole dry barley.

100 pounds of FINELY GROUND barley
equal
113.1 pounds of whole dry barley.

100 pounds of STEAM-ROLLED barley
equal
116.5 pounds of whole dry barley.

Preparation of Oats and Barley for Pigs

By

A. W. Oliver

This Bulletin reports the results of experiments on the preparation of barley and oats for growing and fattening pigs.

The work was limited to barley and oats, as these are the grains that are most generally fed to hogs in Oregon.

In these experiments barley and oats were fed whole dry, whole soaked, steam rolled, finely ground, and coarsely ground. Oats were fed to growing pigs under 100 pounds live weight, while the barley experiments were with fattening pigs weighing about 100 pounds at the start and about 180 pounds at the finish.

Good feed grade of barley and oats were fed in these experiments. The weight per bushel for the oats was 36 to 38 pounds and for the barley was 46 to 50 pounds.

PREPARATION OF OATS FOR GROWING PIGS

Feed	Daily gain	Feed per 100 pounds gain
	Lb.	*Lb.*
Whole oats soaked vs. whole oats dry (Average of three trials)		
Whole dry	.74	531
Whole soaked	.71	533
Ground oats vs. whole oats dry (Average of six trials)		
Whole dry	.71	572
Coarse ground	.76	552
Finely-ground	.87	499
Steam-rolled oats vs. whole dry oats		
1928		
Whole dry	.70	549
Steam rolled	.70	585
1929		
Whole dry	.54	744
Steam rolled	.63	741

The data from these experiments show that there was little or no advantage gained in soaking whole oats for growing pigs, but that there was an advantage in grinding. Coarse grinding decreased the amount of feed per hundred pounds of gain by 3.6 percent and fine grinding decreased it by 12.7 percent. In both cases the preparation increased the daily gains. The increase in daily gain for the finely ground oats lot was considerably greater than that for coarsely ground oats. The fine grinding was therefore far superior to coarse grinding as a preparation of oats for growing pigs. The improvement due to coarse grinding was so small that it did not pay

for the cost of grinding. Based on these results it would seem advisable to feed oats either whole or finely ground to this class of pigs.

It does not seem advisable to steam-roll oats for growing pigs. The results with steam-rolled oats are quite different from results obtained with steam-rolled barley.

Feeding value of oats after different preparations

100 pounds of whole oats soaked equal 99.62 pounds of whole dry oats.
100 pounds of coarsely ground oats equal 103.62 pounds of whole dry oats.
100 pounds of finely ground oats equal 112.7 pounds of whole dry oats.
100 pounds of steam-rolled oats equal 97.58 pounds of whole dry oats.

PREPARATION OF BARLEY FOR FATTENING PIGS

Feed	Daily gain	Feed per 100 pounds gain
	Lb.	*Lb.*
Whole barley dry vs. whole barley soaked (Average of three trials)		
Whole dry	1.08	447
Whole soaked	1.09	496
Ground barley vs. whole barley dry (Average of five trials)		
Whole dry	1.12	467
Coarse ground	1.46	422
Finely ground	1.61	406
Steam-rolled barley vs. whole barley dry (Average of five trials)		
Whole dry	1.12	467
Steam rolled	1.59	390

In these experiments the soaking of barley lowered its feeding value. The soaked-barley lots ate more grain and made slightly larger daily gains. In spite of this, these lots required considerably more feed per hundred pounds of gain. The feed consumption of the lots receiving the soaked grain was based on the weight of the grain before soaking.

Grinding improved the feeding value of barley more than it did that of oats. Fine grinding of barley improved the feeding value of barley 13 percent. Coarse grinding increased the feeding value only 9.6 percent for the same amount of feed per pound of gain.

Steam rolling of barley increased its feeding value 16.5 percent, which was more than that of fine grinding. Unfortunately, the equipment for steam rolling barley is too expensive to be suitable for farm use.

Value of preparation of barley

100 pounds of whole barley soaked equal 90.12 pounds of whole dry barley.
100 pounds of coarsely ground barley equal 109.6 pounds of whole dry barley.
100 pounds of finely ground barley equal 113.1 pounds of whole dry barley.
100 pounds of steam-rolled barley equal 116.5 pounds of whole dry barley.

DEGREE OF FINENESS

In these experiments grain was considered finely ground when the particles were so small that it was difficult to distinguish the hulls from the kernels. Grain was considered coarse ground when all the kernels were broken but it was easy to distinguish the hulls from the kernels. The fineness modulus* for the ground grain fed in these experiments was 1.9–2.6 for the finely ground and 3.3–4.0 for coarse ground.

COST OF PREPARATION OF GRAIN

Grain and preparation	Kilowatt-hours per ton†	Power cost per ton @ 3¢ per K.W.H.		Saving in grinding compared to feeding whole dry grain at price per ton of whole grain. $40.00	$30.00
Oats: *Coarse grinding*	10.3	$0.309		$1.44	$0.98
Oats: *Fine grinding*	19.2	.576		5.08	3.81
Barley: *Coarse grinding*	13.7	.411		3.84	2.88
Barley: *Fine grinding*	33.8	1.014		5.24	3.93
Barley: *Steam rolling*	6.67	.20			
Extra labor of sacking					
Man labor—3.17 hr. per ton @ 40¢ per hr.	------	1.27	$2.25	$6.60	$4.95
Coal—97.5 lb. per ton @ $16.00 per ton	------	.78			

Certain types of mills are suitable for certain kinds of grinding. Burr mills are not as suitable for fine grinding as the hammer mills. Most hammer mills will grind grains finely when a screen with ⅛-inch holes is used.

Steam rolling of grains costs more than grinding, as it requires a man to sack the grain. If steam-rolled grain is put into a bin the grain will mold. It is necessary to have a steam boiler, a steamer for steaming barley, and a roller mill. This equipment is more expensive than a grinder and is more difficult to operate. When the grain is ground dry, however, the grinder and bins can be so arranged that only a few minutes of man labor will be required per ton. The simplest system is to have the grinder set under a bin so that the whole grain will feed into the mill by gravity and the fan on the mill will elevate the ground grain into another bin.

*Modulus as determined by Rural Electrification division of the American Society of Agricultural Engineers.

†Data obtained from C. J. Hurd of Agricultural Engineering department.